



Lighting up the World The first global application of the open source, spatial electrification toolkit (ONSSET)

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In September 2015, the international community has adopted a new set of targets, following and expanding on the millennium development goals (MDGs), the Sustainable Development Goals (SDGs). Ensuring access to affordable, reliable, sustainable and modern energy for all is one of the 17 set goals that each country should work towards realizing. According to the latest Global Tracking Framework, 15% of the global population live without access to electricity. The majority of those (87%) reside in rural areas. Countries can reach universal access through various electrification options, depending on different levels of energy intensity and local characteristics of the studied areas, such as renewable resources availability, spatially differentiated costs of diesel-fuelled electricity generation, distance from power network and major cities, population density and others, data which are usually inadequate in national databases. This general paucity of reliable energy-related information in developing countries calls for the utilization of geospatial data. This paper presents a Geographic Information Systems (GIS) based electrification analysis for all countries that have not yet reached full access to electricity (Sub-Saharan Africa, Developing Asia, Latin America and Middle East). The cost optimal mix of electrification options ranges from grid extensions to mini-grid and stand-alone applications and is identified for all relevant countries. It is illustrated how this mix is influenced by scrolling through various electrification levels and different oil prices. Such an analysis helps direct donors and investors and inform multinational actions with regards to investments related to energy access.